

REMARKS

Status of the Claims

Claims 23-40 are pending in the application.

Claims 23-40 stand rejected.

The Amendment:

Applicants have amended claim 23 to specify that the claimed product is a chewing gum ingredient which is used internally in a chewing gum. Claim 32 has been similarly amended to specify that it is a chewing gum ingredient that is being prepared by the claimed process.

The First Rejection Under 35 U.S.C. 103(a).

The Examiner has rejection claims 23-31, under 35 U.S.C. 103(a) as being unpatentable over Cherukuri et al. (US 4,961,935), Coia et al. (US 4,971,798), Reed et al. (US 5,248,508), Yotka et al. (WO 95/08926) or the Food Technology article (page 128). The Examiner holds:

Each primary reference discloses isomalt or Palatinit in crystalline or solid form. Additionally, Cherukuri et al. discloses that the Palatinit provides crunch to chewing gum (col. 13, lines 50-57). Flavoring and colorant may also be included with the isomalt or Palatinit in each primary reference except for the Food Technology article. Finding the optimum particle size of the isomalt particles would require nothing more than routine experimentation by one reasonably skilled in the art.

Reconsideration and withdrawal is respectfully requested for the reasons as follow.

Applicants' claimed invention, as amended herein, is to a chewing gum ingredient which provides crunch when used as an additive internally in a chewing gum. That additive consists essentially of isomalt. The claimed product may contain optional ingredients such as flavoring agents, coloring agents, and most minor quantities of other polyols, but these materials are incidental to the claimed invention and not essential to the claimed crunch providing property. The ingredient is a granulated product, one which is crystalline in nature but of a size, due to the processing limitations, which is at least 50 mesh. The granulate must be of sufficient size or dimension to be noticed by the consumer upon chewing of the gum in which the ingredient is used.

None of the cited primary references suggest that isomalt be formed into a granulate nor that a granulate be used as a chewing gum ingredient to provide internal crunch to a gum.

Cherukuri et al. (US 4,961,935), teach chewing gums containing isomalt. The isomalt is used as a bulk sweetener to provide firmer texture and reduced moisture absorption properties to the gum. The bulking agent, which is available as a crystalline

powder, is not subjected to any treatment prior to use. The gum is blended by conventional methods to produce a homogeneous mixture. One in the art would understand that to be a smooth blend given no understanding to the contrary.

There is no suggestion in Cherukuri et al. that one should modify the isomalt in the manner taught by applicants to provide a granule to be used as a texture modifier. It is quite clear that Cherukuri et al. intended that the isomalt be used as in the same manner as other sugar substitutes had been used. There is no suggestion in Cherukuri et al. that it would be desirable to add any ingredient to a chewing gum in order to provide a different mouthfeel, namely one which provides crunch such as that taught by applicants.

The Examiner refers to the Cherukuri et al. teaching at col. 13, lines 50-57 as disclosing that isomalt can provide crunch to a chewing gum. Applicants disagree with the Examiner's position in this matter. This example refers to crunch provided by the coating on the pellet gum taught in the Example. Hard coated chewing gums are required to provide good crunch upon biting into the coating. Cherukuri et al. was demonstrating that an isomalt containing gum could be coated and that the coating would have a crunch equal to or superior to one wherein other bulking agents were used in the gum core.

Coia et al. (US 4, 971,798), concern non-chewing gum confectionery, particularly hard confectionery, containing isomalt. Hard confections are defined by Coia et al. as amorphous products, conventionally prepared from sugar solutions by heating and solidification through water evaporation. No crystallization is involved in that process. No granule is formed. No granule is used. There is no suggestion in the Coia et al. teaching of a hard candy of applicants' claimed granulated chewing gum ingredient to provide crunch.

Reed et al. (US 5,248,508) concern hard coated chewing gum, particularly pellet gum, in which isomalt is used in the coating. The teaching concerns the gum core. Reed et al. require that 3% or less glycerin be used as plasticizer in the gum to prevent problems associated with the use of isomalt in the coating. The hardness of the coating could be adversely affected by the continuous drying and absorption of water in the coating caused by too much glycerin in the gum core. The coating taught by Reed et al. was the conventional amorphous mass formed by conventional coating processes which use a liquid syrup of the isomalt. Reed et al. teach that the coating process should be conducted at a maximum temperature of 77°C in order to prevent the isomalt syrup from crystallizing.

The teaching of Reed et al. is not at all suggestive of applicants' invention in that applicants' teach an ingredient to be used internally in a chewing gum. Applicants teach a granule to provide internal crunch to a gum having a particular particle size. Reed et al. teach nothing concerning isomalt in a core. In regard to the coating Reed et al. provide no discussion of granule, nor particle size, since, as is self-evident, there are no particles, just a continuous outer shell.

The hard coating of Reed et al. does not suggest a chewing gum ingredient which is granulated, that granule to be used internally in a chewing gum to provide crunch. The method taught by Reed et al. cannot produce that product and does not suggest that one do so.

Yatka et al. (WO 95/08926) were concerned with chewing gums containing isomalt as the bulking agent. Yatka et al. discuss isomalt as being useful as a replacement for sugar and that gums containing high levels of isomalt would be softer and less hygroscopic than sugar-containing gum formulations. Yatka et al. teach that the isomalt should be used as a powder or as a syrup combined in the gum formulation, or co-dried, or blended, with other bulk sweeteners prior to use.

Yatka et al. were chiefly concerned with encapsulating, agglomerating or absorbing the isomalt with the other materials to provide a controlled release product. Physical modification of the bulk sweetener by encapsulation and the like with another substrate slow its release due to reduced solubility or dissolution rate. Standard techniques were used to prepare the materials. In all cases Yatka et al. teach that the encapsulated material should be ground and used as a powdered, coated sweetener per se, or the powder used to first form a syrup.

*powder
internal
crunch
crunch is not
from 5 and 9 d* There is nothing in this teaching by Yatka et al. which suggests a granulation of isomalt to provide a crunch texture to the chewing gum. Yatka et al. were concerned solely with the use of the combined isomalt as a bulking agent, to be blended into the chewing gum formula as a powder or a syrup, the standard method for blending a bulking agent into a chewing gum.

The Food Technology article (page 128) teaches the properties of isomalt including its availability as a crystalline material. There is no suggestion in the teaching of the properties, and the many uses, of isomalt that isomalt should or could be granulated to provide an ingredient that could provide internal crunch to a chewing gum.

None of the cited primary references suggest that isomalt be formed into a granulate and that granulate be used as a chewing gum ingredient to provide internal crunch to a gum. Wherein isomalt is used internally as a bulking agent in a chewing gum it is used in the form in which it is generally available, namely as a crystalline powder. There is no teaching, nor suggestion in any teaching, to the contrary. Where it is used in the gum as the bulking agent it is dispersed throughout the gum in the usual manner. A homogeneous, smooth blend is the goal of the gum artisan.

In view of the above applicants respectfully submit that the rejection of claims 23-31 under 35 U.S.C. 103(a) should be withdrawn.

The Second Rejection Under 35 U.S.C. 103(a).

The Examiner has rejected claims 32-40, under 35 U.S.C. 103(a) as being unpatentable over Cherukuri et al. (US 4,961,935), Coia et al. (US 4,971,798), Reed et

al. (US 5,248,508), Yotka et al. (WO 95/08926) or the Food Technology article (page 128), and further in view of Tanaka et al. (US 5,709,895). The Examiner holds:

It would have been obvious to prepare the isomalt or Palatinit in each primary reference in accordance with applicants' claimed procedure since it is old to prepare a ground isomalt containing mixture by such procedure, as evidenced by Tanaka et al. (col 3, lines 35-43 and col. 4, lines 47-49).

Reconsideration and withdrawal is respectfully requested for the reasons as follow.

Applicants teach and claim a process for the preparation of a granulated isomalt chewing gum ingredient for providing crunch internally to a chewing gum, wherein that process comprises heating isomalt at a temperature of 130°C or higher; cooling the isomalt to form a solid; and granulating the solid to a particle size greater than 50 mesh to provide the right texture modifying crunch additive.

Cherukuri et al. (US 4,961,935), Coia et al. (US 4, 971,798), Reed et al. (US 5,248,508), Yotka et al. (WO 95/08926) and the Food Technology article (page 128) have been cited by the Examiner as primary references. These references are discussed above. None of these references teach an isomalt other than that which is used as a powder or in syrup form. Yotka et al. is the only teaching which concerns modification of isomalt powder. Yotka et al. were chiefly concerned with encapsulating, agglomerating or absorbing the isomalt with another material to provide a controlled release product. Standard techniques were used to prepare the materials. In all cases the encapsulated material was ground to a powdered, coated sweetener or the powder was used to first form a syrup.

None of these references suggest the claimed method since none are concerned with a product which suggests the product produced by that method. None suggest that isomalt be treated in the manner treated by applicants for any purpose taught therein.

The secondary reference, Tanaka et al., teaches a process for encapsulating a flavor. The encapsulating matrix is composed of both a hydrogenated saccharide and a modified starch which Tanaka et al. use in a weight ratio ranging from 15:85 to 85:15 on a solid basis. The carbohydrate mixture is heated to a molten state and the flavor is added thereto with thorough mixing in the molten state. The resultant uniform mixture is then transferred to an extruder where, under pressure, the mixture is extruded, cooled upon exiting from the exit port, and subsequently cut or ground to a particle size from 20-60 mesh.

in view of
This method by Tanaka et al. does not suggest the method taught and claimed by the applicants. Tanaka et al. blend materials to produce an encapsulate. Required in that method are heating of the carbohydrate mix, a mixing stage for blending in a flavor, and a subsequent extrusion stage. Applicants claimed process does not have these required limitations. Applicants neither blend nor mix ingredients, nor heat and extrude. Applicants heat isomalt, neat or in a solution, to a temperature of 130°C or higher to remove moisture and/or melt the isomalt, cool the crystalline melt to form a solid isomalt

without further processing and granulate the solid to provide the crunch additive of a size of greater than 50 mesh.

Applicants respectfully submit that there is no motivation in the Tanaka et al. teaching to modify the Tanaka et al. method to provide that of applicants. Tanaka et al. does not suggest that any step can be omitted. Tanaka et al. provide considerable detail regarding how the steps, in particular the extrusion step, can be carried out. The additional references cited by the Examiner do not provide that motivation. They do not relate to processing isomalt. Nor would there be any inference in the way isomalt is used in those references which would be applicable to the Tanaka et al. teaching. Only Yotka et al. perform a modification of the isomalt and Yotka et al. as discussed above, does not teach formation of a granulate.

Tanaka et al. do not expressly nor inherently suggest applicants' claimed invention as amended herein. The additional primary references which teach isomalt do not suggest that any process is needed to prepare the powdered isomalt wherein the same is used. In view of the above applicants respectfully submit that the rejection of claims 32-40 under 35 U.S.C. 103(a) should be withdrawn.

Conclusion

In view of the above applicants believe this application is in condition for allowance. Favorable action is solicited. If any questions remain, the resolution of which would be advanced by conference (telephonic or personal) with applicants' agent, the Examiner is invited to contact said agent at the telephone or the fax number noted below.

Respectfully submitted,
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Attachment: VERSION WITH MARKINGS TO SHOW CHANGES MADE

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claim 23 (twice amended)

A chewing gum ingredient which is a granulated additive for providing crunch to a chewing gum, said ingredient being incorporated internally into said gum wherein said crunch providing [additive] ingredient consists essentially of isomalt, said [isomalt additive] ingredient prepared by a process wherein isomalt is heated at a temperature of above 130°C, cooled to form a solid isomalt product and granulated to a particle size greater than 50 mesh.

Claim 32 (twice amended)

A process for the preparation of a chewing gum ingredient which is a granulated additive for providing crunch to a chewing gum, said ingredient being incorporated internally into said gum wherein said crunch providing [additive] ingredient consists essentially of isomalt, said process comprising:

- a) heating isomalt at a temperature of 130°C or higher;
- b) cooling to form a solid;
- c) granulating said solid to a particle size greater than 50 mesh.

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